

Serial No.: 09/786,611

Examiner: T. Nguyen

Title: AV DATA RECORDING APPARATUS AND METHOD, DISK RECORDED WITH THE AV DATA RECORDING APPARATUS OR METHOD, AND AV DATA REPRODUCING APPARATUS AND METHOD

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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1-50 (canceled)

51. (currently amended) An AV data recording apparatus comprising:

~~a transport stream assembling section to divide an audio signal and a video signal into transport packets and to assemble a plurality of the transport packets as one transport stream, and a recording section operable to record, in a plurality of logical blocks on a recording medium, a data stream comprising a plurality of packets of a fixed length, the size of which has a non-integral multiple relationship with that of the logical block, formed on the basis of at least one signal being selected from a group containing an audio signal and a video signal the transport stream;~~

~~the recording section comprising a logical block managing section operable to manage whether a logical blocks on the recording medium are a disk is used or not[.]; and~~

~~a continuous data area detecting section operable to detect a continuous data area on the recording medium comprising a plurality of continuous and unused logical blocks on the basis of a status of use for each of the logical blocks managed by said logical block managing section that ensures realtime continuous reproduction of the audio signal and the video signal, and a recording control section to determine a logical block number of the continuous data area on which the transport stream is to be recorded[.];~~

~~wherein the plurality of packets of a fixed length comprising the data stream are transport stream is recorded continuously by said recording section without providing any spacing, in on the plural continuous data areas on the recording medium detected by the continuous data area detecting section.~~

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52. (previously presented) The AV data recording apparatus according to claim 51, wherein the continuous data area comprises plural continuous logical blocks that enable recording at a maximum recording/reproducing rate during at least a period required for securing reproduction data for a maximum move time of a reading/writing head at the continuous data area detection section.

53. (currently amended) The AV data recording apparatus according to claim 51, wherein ~~the transport stream is assembled by dividing an audio signal and a video signal into transport packets, configuring the plural transport packets for a predetermined time length as one unit packet, and by aligning the unit packets of a fixed length are transport packets.~~

54. (canceled)

55. (currently amended) The AV data recording apparatus according to claim 51, wherein a recording of the data stream which finishes in a midst of one of the logical blocks, is followed immediately by a continuous recording of a subsequent data stream ~~transport stream comprising transport packets based on digital broadcast using MPEG is assembled at the transport stream assembling section.~~

56. (currently amended) The AV data recording apparatus according to claim ~~[[52]]~~51, further comprising a data stream assembling section operable to form a data stream comprising a plurality of packets of a fixed length on the basis of at least one signal selected from the group containing the audio signal and the video signal wherein a ~~transport stream comprising transport packets based on digital broadcast using MPEG is assembled at the transport stream assembling section.~~

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57. (currently amended) An AV data recording apparatus comprising a PES (Packetized Elementary Stream) stream assembling section to divide an audio signal and a video signal into PES packets and to assemble a plurality of the PES packets of a fixed length as one PES stream, and a recording section to record the PES stream in a plurality of logical blocks on a recording medium;

the size of the PES packet of a fixed length having a non-integral multiple relationship with that of the logical block;

the recording section compris[es]ing a logical block managing section to manage whether a logical block on the recording medium ~~a disk~~ is used or not, a continuous data area detecting section to detect a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and a recording control section to determine a logical block number of the continuous data area on which the PES stream is to be recorded;

wherein the PES stream is recorded continuously without providing any spacing in ~~on~~ the plural continuous data areas detected by the continuous data area detecting section.

58. (previously presented) The AV data recording apparatus according to claim 57, wherein the continuous data area comprises plural continuous logical blocks that enable recording at a maximum recording/reproducing rate during at least a period required for securing reproduction data for a maximum move time of a reading/writing head at the continuous data area detection section.

59. (previously presented) The AV data recording apparatus according to claim 57, wherein the PES stream is assembled by dividing an audio signal and a video signal into PES packets, configuring the plural PES packets for a predetermined time length as one unit packet, and by aligning the unit packets.

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60. (previously presented) The AV data recording apparatus according to claim 58, wherein the PES stream is assembled by dividing an audio signal and a video signal into PES packets, configuring the plural PES packets for a predetermined time length as one unit packet, and by aligning the unit packets.

61. (canceled)

62. (currently amended) An AV data recording apparatus comprising a system stream assembling section to assemble an audio signal and a video signal as one system stream comprising a plurality of packets of a fixed length, and a recording section to record the system stream in a plurality of logical blocks on a recording medium;

The size of the packet of a fixed length having non-integral multiple relationship with that of the logical block;

the recording section comprising a logical block managing section to manage whether a logical block on the recording medium ~~a disk~~ is used or not, a continuous data area detecting section to detect a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and a recording control section to determine a logical block number of the continuous data area on which the system stream is to be recorded;

wherein the AV data recording apparatus further comprises a post-recording control section to record continuously the system stream on the plural continuous data areas detected by the continuous data area detecting section, and at the same time, to record a plurality of dummy data being equal to the logical block in total size on the logical block so as to replace only the dummy data with audio data at the time of post-recording.

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63. (previously presented) The AV data recording apparatus according to claim 62, wherein the post-recording control section records the system stream continuously on a plurality of the continuous data areas detected by the continuous data area detecting section, and at the same time, records a plurality of dummy data whose total size being larger than a logical block in at least one of the logical blocks; and

replaces only the dummy data included in a predetermined logical block with audio data at the time of post-recording.

64-88 (canceled)

89. (currently amended) An AV data recording method comprising:

~~dividing an audio signal and a video signal into transport packets and assembling a plurality of the transport packets as a transport stream, and recording, in a plurality of logical blocks on a recording medium, a data stream comprising a plurality of packets of a fixed length, the size of which has a non-integral multiple relationship with that of the logical block, formed on the basis of at least one signal being selected from a group containing an audio signal and a video signal~~ the transport stream;

~~the method further comprising:~~

~~managing whether a logical blocks on the recording medium are a disk is used or not[[.]]; and~~

~~detecting a continuous data area on the recording medium comprising a plurality of continuous and unused logical blocks on the basis of a status of use for each of the logical blocks managed by said logical block managing section that ensures realtime continuous reproduction of the audio signal and the video signal, and determining a logical block number of the continuous data area on which the transport stream is to be recorded;~~

~~wherein the plurality of packets of a fixed length comprising the data system are transport stream is recorded continuously by said recording without providing any spacing, in the on the plural continuous data area[[s]] on the recording medium that have been detected.~~

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90. (currently amended) The AV data recording method according to claim 89, wherein the continuous data area comprises plural continuous logical blocks that enable recording at a maximum recording/reproducing rate during at least a period required for securing reproduction data for a maximum move time of a reading/writing head at a detection of ~~in the detection of~~ the continuous data area.

91. (currently amended) The AV data recording method according to claim 89, wherein ~~the transport stream is assembled by dividing an audio signal and a video signal transport packets, configuring the plural transport packets for a predetermined time length as one unit packet, and by aligning the unit packets of a fixed length are transport packets.~~

92. (canceled)

93. (currently amended) The AV data recording method according to claim 89, wherein a recording of the data stream which finishes in a midst of one of the logical blocks, is followed immediately by a continuous recording of a subsequent data stream ~~transport stream comprising transport packets based on digital broadcast using MPEG is assembled while the transport stream is assembled.~~

94. (currently amended) The AV data recording method according to claim 90, further comprising forming a data stream comprising a plurality of packets of a fixed length on the basis of at least one signal selected from the group containing the audio signal and the video signal ~~wherein a transport stream comprising transport packets based on digital broadcast using MPEG is assembled while the transport stream is assembled.~~

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95. (currently amended) An AV data recording method comprising:

dividing an audio signal and a video signal into PES packets and assembling a plurality of the PES packets of a fixed length as a PES stream, and recording the PES stream in a plurality of logical blocks on a recording medium, the size of the PES packet of a fixed length having a non-integral multiple relationship with that of the logical block;

the method further comprising: managing whether a logical block on the recording medium ~~a disk~~ is used or not, detecting a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and determining a logical block number of the continuous data area on which the PES stream is to be recorded;

wherein the PES stream is recorded continuously without providing any spacing in on the plural continuous data areas which have been detected.

96. (previously presented) The AV data recording method according to claim 95, wherein the continuous data area comprising the plural continuous logical blocks that enable recording at a maximum recording/reproducing rate during at least a period required for securing reproduction data for a maximum move time of a reading/writing head is detected during detection of the continuous data area.

97. (currently amended) The AV data recording method according to claim 95, wherein the PES transport stream is assembled by dividing an audio signal and a video signal into PES packets, configuring the plural PES packets for a predetermined time length as one unit packet, and by aligning the unit packets.

98. (currently amended) The AV data recording method according to claim 96, wherein the PES transport stream is assembled by dividing an audio signal and a video signal into PES packets, configuring the plural PES packets for a predetermined time length as one unit packet, and by aligning the unit packets.

99. (canceled)

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100. (currently amended) An AV data recording method comprising:

assembling an audio signal and a video signal as a system stream comprising a plurality of packets of a fixed length, and recording the system stream in a plurality of logical blocks on a recording medium, the size of the packet of a fixed length having a non-integral multiple relationship with that of the logical block;

the method further comprising:

managing whether a logical block on the recording medium a-disk is used or not,

detecting a continuous data area that ensures realtime continuous reproduction of the audio signal and the video signal, and

determining a logical block number of the continuous data area on which the system stream is to be recorded;

wherein the AV data recording method further comprises:

continuous recording of the system stream on the plural detected continuous data areas and at the same time, recording of a plurality of dummy data whose total size is equal to a logical block area in the logical block, and

replacing only the dummy data with audio data at the time of post-recording.

101. (previously presented) The AV data recording method according to claim 100, wherein during a replacement of only the dummy data with audio data in the post-recording, the system stream is recorded continuously on a plurality of the detected continuous data areas and at the same time, a plurality of dummy data that are larger in total size than a logical block are recorded in at least one logical block; and

only the dummy data included in a predetermined logical block are replaced with audio data at the time of post-recording.

102-140 (canceled)

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141. (new) A recording medium for recording a data stream comprising a plurality of packets of a fixed length formed on the basis of at least one signal being selected from a group of containing an audio signal and a video signal, comprising:

a plurality of logical blocks, the size of which has a non-integral multiple relationship with that of the fixed length of the packet;

wherein the plurality of packets of a fixed length comprising the data stream are recorded continuously without any spacing in a continuous data area comprised of the plurality of continuous logical blocks.

142. (new) The recording medium according to claim 141, wherein the packets of a fixed length are transport packets.

143. (new) The recording medium according to claim 141, wherein a data stream which finishes in a midst of one of the logical blocks, is followed immediately by a subsequent data stream.

144. (new) The recording medium according to claim 141, wherein the packets of a fixed length are PES packets.